What is claimed is:

1. A demodulation method for establishing synchronization from a received signal that contains a synchronization establishment signal wherein the change in phase periodically alternates between positive and negative, and demodulating said received signal,

the demodulation method comprising a step of establishing synchronization from said received signal based on the timing of changes in the positive/negative polarity of the change in phase of the synchronization establishment signal contained in the received signal, and demodulating said received signal.

2. A demodulation method according to claim 1, wherein

synchronization is established from a plurality of received signals for each received signal and each of said received signals is demodulated.

3. A synchronization establishment apparatus that establishes synchronization from a received signal that contains a synchronization establishment signal wherein the change in phase periodically alternates between positive and negative,

the synchronization establishment apparatus comprising:

positive/negative change timing detection means that detects the timing of changes in the positive/negative polarity of the change in phase of the synchronization establishment signal contained in the received signal, and

synchronization establishment means that establishes synchronization from said received signal based on the detected timing.

4. A modem that modulates transmitted signals, and also establishes synchronization from a received signal that contains a synchronization establishment signal wherein the change in phase periodically alternates between positive and negative, demodulates said received signal

the modem comprising:

modulating means that modulates transmitted signals,

positive/negative change timing detection means that detects the timing of changes in the positive/negative polarity of the change in phase of the synchronization establishment signal contained in the received signal,

synchronization establishment means that establishes synchronization from said received signal based on the detected timing, and

demodulation means that demodulates said received signal according to the established synchronization timing.

5. A base station that, in a traffic information system wherein base stations and mobile stations communicate wirelessly, modulates signals and wirelessly transmits the same to the mobile stations, and also wirelessly receives from the mobile stations a signal that

contains a synchronization establishment signal wherein the change in phase periodically alternates between positive and negative, establishes synchronization from said received signal and demodulates said received signal

the base station comprising:

an antenna that transmits and receives wireless signals,

modulating means that modulates signals,

transmission means that wirelessly transmits modulated signals to the mobile stations via the antenna,

receiving means that receives via the antenna signals transmitted wirelessly from the mobile stations,

positive/negative change timing detection means that detects the timing of changes in the positive/negative polarity of the change in phase of the synchronization establishment signal contained in the received signal,

synchronization establishment means that establishes synchronization from said received signal based on the detected timing,

demodulation means that demodulates said received signal according to the established synchronization timing, and

control means that communicates the signals exchanged with the mobile station to external apparatus.

6. A synchronization establishment apparatus according to claim 3, wherein

synchronization is established from a plurality of received signals for each received signal.

7. A modem according to claim 4, wherein

synchronization is established from a plurality of received signals for each received signal and each of said received signals is demodulated.

8. A base station according to claim 5, wherein

synchronization is established from a plurality of received signals for each received signal and each of said received signals is demodulated.

9. A demodulation method according to claim 1, wherein

a preamble pattern wherein 1001 is repeated in $\pi/4$-shift QPSK is used as the synchronization establishment signal, and

a burst signal containing said preamble pattern is used as the received signal.

10. A synchronization establishment apparatus according to claim 3, wherein

a preamble pattern wherein 1001 is repeated in $\pi/4$-shift QPSK is used as the synchronization establishment signal, and

a burst signal containing said preamble pattern is used as the received signal.

11. A modem according to claim 4, wherein

a preamble pattern wherein 1001 is repeated in $\pi/4$-shift QPSK is used as the synchronization establishment signal, and

a burst signal containing said preamble pattern is used as the received signal.

12. A base station according to claim 5, wherein

a preamble pattern wherein 1001 is repeated in $\pi/4$-shift QPSK is used as the synchronization establishment signal, and

a burst signal containing said preamble pattern is used as the received signal.

13. A synchronization establishment apparatus according to claim 10, wherein

the synchronization establishment apparatus comprises:

an A/D converter that converts the received burst signal from an analog signal to a digital signal,

a phase detection circuit that, based on said digital signal, demodulates I component data and Q component data, acquires the phase corresponding to the absolute value of I component data and the absolute value of Q component data, and if the positive/negative polarity of the I component data and the positive/negative polarity of the Q component data are different, outputs a value which is the value of the phase thus acquired to which a negative polarity is applied, but if these positive/negative polarities are the same, outputs a value which is the value of the phase thus acquired to which a positive polarity is applied,

an offset level generation circuit that generates and outputs an offset value equivalent to the phase rotation due to $\pi/4$-shift QPSK,

a first adder that adds the output value from the phase detection circuit to the offset value from the offset level generation circuit,

an unwrap circuit that outputs an offset value that corrects discontinuity data when the phase has rotated by π,

a second adder that adds the output value from the first adder to the offset value from the unwrap circuit and outputs the result of this addition,

a filter circuit that filters the output value from the second adder and outputs same,

a polarity bit converter that outputs data of different values when the polarity of the output value from the filter circuit is positive than when negative,

a change point extraction circuit that, based on the output value from the polarity bit converter, extracts the positive/negative change points in the value of the waveform of the phase difference,

a change point measurement circuit that averages the positive/negative change point timing of said extracted phase difference,

a clock synchronization establishment circuit that, based on the average value from the change point measurement circuit, establishes clock synchronization, and

a timing generation circuit that, based on the timing at which the received burst signal starts, determines the position to reset the clock.